10 Billion by Stephen Emmott

10 Billion by *Stephen Emmott*. London: Penguin, 2013, 198 pp, 13 graphs, 12 B&W photographs, £6.99 paperback ISBN 978-0-141-97632-7

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Kate Saffin of the LSE suggests that this book 'will be particularly interesting to those studying or practicing science communication.'[1] I shall be using it with students and others to illustrate how *not* to communicate about climate change or other global challenges, especially if one wishes to promote appropriate responses to mitigate the problems.

The provenance of *10Billion* as a lecture show, presented at the Royal Court Theatre in London in July and August 2012, is easy to see in this small paperback. It is a graphic presentation of what Stephen Emmott regards as 'an unprecedented planetary emergency' (p. 7), beginning and ending with human population growth and encompassing a broad range of issues from biodiversity loss and climate change to the future potential for food riots, a global pandemic, and worldwide catastrophe. The book is illustrated with graphs of data such as world population, global carbon emissions, and various measures of consumption, and with black and white photographs that very effectively depict the shocking impacts of humanity on the planet.

At no more than 12,000 words, if that, the text accords only brief treatment to these issues, and has been worked up into a book by employing a large font and only partial use of most pages – sometimes for just one or two short sentences. This is arguably an accessible and attention-catching method of communication, although unfortunately it does lay both author and publisher open to charges of waste, hypocrisy about resource use, and poor value for money, as demonstrated by several Amazon reviews.[2]

More problematic is the lack of references, simplistic presentation of the issues, and the preponderance of factual errors in the book.

The graphs are the only data that are referenced. This makes it impossible to follow up striking claims such as that 'It takes around 27,000 litres of water to produce one kilogram of chocolate' (p. 73). It seems likely that a significant proportion of this figure must be the large amount of water required for cocoa beans to grow, but then the pertinent question is whether the water is naturally available through rainfall, and likely to continue to be so in the regions in which cocoa is grown, or whether climate change or irrigation of the trees is creating water stress. This is not addressed.

This is typical of a work in which analysis is sketchy at best, and little context is given for the statistics presented. Nor does Emmott admit nuanced argument. For example, he paints a

[1] http://blogs.lse.ac.uk/lsereviewofbooks/2013/11/19/book-review-10-billion/
[2] See http://www.amazon.co.uk/Ten-Billion-Stephen-Emmott/dp/0141976322

chilling picture of the negative impacts of climate change on crop yields, but makes no mention of predictions that while even moderate temperature increases are likely to reduce yields of major cereal crops at low latitudes, moderate to medium temperature increases in mid- to high-latitude regions may lead to small increases in yields (IPCC 2007). The overall conclusion that climate change threatens food production is correct, and it is perfectly reasonable for Emmott to raise the possibility of famines and food riots. It is also understandable that a book intended for a general readership will not be as detailed as scientific journal papers. However, his one-dimensional analysis and tendency to use worst-case examples makes his case vulnerable to claims of exaggeration and bias in the use of data, and also means he misses other problems, such as increasing inequality or differential motivations to address climate change that might be the outcome of variances in impacts globally.

Even more of a gift to sceptics and deniers who wish to discredit the book are the factual inaccuracies it contains. Emmott has produced a list of 19 corrections to be made to future editions, plus three revised graphs.[3] Some of the corrections involve significant errors; a mistake of three orders of magnitude in the amount of water required to produce a semiconductor chip, for example, leads to an amendment to the total water consumed by chip production from 'at least 145 trillion litres' to 'something like 200 billion litres' (p. 75).

Emmott argues that we need to consume less, and that 'it is worth pointing out that 'we' refers to the people who live in the west and the north of the globe' (p. 185). Nevertheless, the title of the book, and presentation of statistics at the beginning and end about population growth, suggests that Emmott regards this as the most significant issue. Indeed, he states that 'a planet of ten billion looks like a nightmare' (p. 150). But ten billion people consuming at a sustainable rate would not cause the problems he outlines. Would such a low rate of consumption necessarily entail 'nightmare' lifestyles? This is a vital question but not one Emmott explores. He regards such a change in consumption patterns as unlikely, but he also presents a very negative picture of the prospects for reducing population growth. There seem to be no possible solutions here.

And that is the crux of the main problem with this book. Emmott devotes over three-quarters of the text to alarming details of global dilemmas and predictions of disaster, and the solutions he finally suggests on p. 151 (of 198) – technological fixes or radical behaviour change – are quickly dismissed. Little examination is offered of the reasons why these will not work or are not happening. Emmott concludes 'I think we're fucked' (p. 196) and then goes on to tell us that when he asked one of the young scientists he works with how he would respond to this situation, the answer was 'Teach my son how to use a gun' (p. 198). These are the last words in the book, highlighted by being given a page to themselves.

What on earth is Emmott intending to achieve? Does he really hope to inspire positive responses to these issues by suggesting that humanity is doomed, and we had better prepare for a kill-or-be-killed world? The 'most helpful favourable review' on Amazon (as of 29 November 2013) states that 'The message I got from the book was one of pure pessimism'[4]; it is difficult to see how one could take away anything else from such a presentation.

A clue to Emmott's thinking is given on p. 182, where he asserts that 'We're not getting the information we need. The scale and nature of the problem is simply not being communicated to us.' But this information-deficit explanation for the lack of appropriate responses has been widely criticised (see, for example, Blake 1999), and the attempted use of

[3] http://research.microsoft.com/en-us/people/semmott/tenbillionbookrevisions.pdf

[4] Review by Annie Bedford; see http://www.amazon.co.uk/Ten-Billion-Stephen-Emmott/dp/0141976322 (accessed 29/11/2013)

fear appeals to prompt action (of which this book is a prime example) is deeply problematic and may be counter-productive.

Take, for example, one of the main issues covered in the book: climate change. In the absence of a sense of agency, fear about climate change can trigger denial, avoidance, apathy, repression, anger, reactance, and maladaptive defensive responses (Moser and Dilling 2004). Messages about the problem therefore need to contain useful, specific information about how to mitigate it, precisely what Emmott does not offer. Several studies show, moreover, that individuals respond better to positive, or gain, frames than to messages that emphasise negative impacts if climate change is not tackled (Maibach *et al.* 2010; Morton *et al.* 2011; Spence and Pidgeon 2010). On the other hand, Feinberg and Willer (2011) found that in the USA, 'dire messages' about climate change lead to increased scepticism.

Such studies suggest that this book will add nothing helpful to debates about how we should respond to the very serious global issues that we do indeed face from climate change, population growth, biodiversity loss, and increasing consumption of water, food, and other resources. Emmott offers no discussion of what sustainable lifestyles might look like, no positive visions of a better future that might encourage people to change their behaviour or press for government action; in fact he suggests that global problems are 'possibly unsolvable' (p. 183). While I empathise with his pessimism, I do not think it is productive to promote it.

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